

**Remarks**

Further and favorable reconsideration is respectfully requested in view of the foregoing amendments and following remarks.

Initially, the Examiner has indicated on the Office Action Summary Form that a claim for foreign priority has been made under 35 U.S.C. § 119, and that all certified copies of the priority documents have been received. However, it is noted that no claim for foreign priority under 35 U.S.C. § 119 was made in this application. The present application is a 371 application of PCT/JP99/05317, filed September 29, 1999.

Claim 4 has been amended to recite a spawned insect being inoculated by injection of hyphal bodies of an entomopathogenic fungus. Support for this amendment can be found on page 11, lines 24-27 of the specification.

The Examiner has maintained and made the restriction requirement final. However, Applicants again assert that the requirement for restriction is improper and should be withdrawn.

The Examiner states that group I of the application lacks novelty and is anticipated by Mizuno. The Examiner takes the position that Mizuno teaches an inoculating agent, cultured hyphae extracted from *Cordyceps sinensis*. However, Applicants' claimed "hyphal bodies" differ from the "hypha extract" of Mizuno. The term hyphal body does not refer to part of hypha, but instead, refers to a special type of cell that an entomopathogenic fungus forms within insect bodies as it grows. Therefore, Mizuno does not anticipate the limitations of Applicants' group I.

The Examiner bases her restriction requirement on the premise that Mizuno anticipates group I, and therefore, the application does not have a special technical feature as required by PCT Rule 13.2. However, group I is not anticipated by Mizuno, for the reasons stated above.

The Examiner also relies on MPEP § 803 to support her restriction requirement. However, Applicants note that MPEP § 803 applies to restrictions in applications filed under 35 U.S.C. § 111. The current application is filed under 35 U.S.C. § 371, and therefore discussion of MPEP § 803 is improper.

Based on the above reasons, the Examiner's basis for the restriction requirement is improper and it should be withdrawn.

The patentability of the present invention over the disclosures of the references relied upon by the Examiner in rejecting the claims will be apparent upon consideration of the following remarks.

The rejection of claim 4 under 35 U.S.C. § 102(b) as being anticipated by Sung et al. is respectfully traversed.

The Examiner takes the position that Sung et al. teach spawn insects (e.g. *Artogeia napi L*, *Hemiptera*, *Plutella xylostella*, *Orthoptera*, *Acantholyda posticalise M*) which are inoculated with fungus and used for the production of fruit bodies.

A distinctive feature of the entomopathogenic fungal bed according to Applicants' invention is that hyphal bodies are inoculated into insect bodies by injection. As opposed to what it seemingly implies, the term "hyphal body" does not refer to a part of hypha(e), but rather to a special type of cell that an entomopathogenic fungus forms within insect bodies as it grows. (See page 8, lines 7-11 of Applicants' specification.) On the contrary, the terms "conodium", "conidia" and "ascospore(s)" refer to dispersion cells formed on the outer surface of insect bodies killed by fungi. Because entomopathogenic fungi are transmitted by these dispersion cells, the dispersion cells need to first attach themselves to the body surface of insects. For this reason, inoculation of entomopathogenic fungi is generally carried out by bringing the dispersion cells into contact with healthy, non-infected insects. The dispersion cells form hyphae, which will then penetrate the exoskeleton of insects to invade the insects' body. An alternative inoculation technique involving exposing an insect to hyphae may also be contemplated. However, each of these inoculation techniques (i.e., inoculation via dispersion cells or hyphae) is carried out on the outside of the insect body. Therefore, the known methods of inoculation do not teach or suggest isolating and culturing the pathogenic cells normally found within the insect bodies (hyphal bodies) for injection.

Sung et al. mention conidia being inoculated to insects. However, the reference does not teach or suggest the use of hyphal bodies. Additionally, the reference does not teach a spawned insect being directly inoculated by injection with hyphal bodies. Therefore, the insect of Sung et al. differs from the spawned insect claimed by Applicants.

For these reasons, the invention of claim 4 is clearly patentable over Sung et al.

The rejection of claim 4 under 35 U.S.C. §102(b) as being anticipated by Kamata et al. is respectfully traversed.

The Examiner takes the position that Kamata et al. teach spawn insects (e.g. *Quadricalcarifera punctatella*) which are inoculated with fungus and used for the production of fruit bodies.

However, Kamata et al. do not inoculate the insects (*Quadricalcarifera punctatella*- a species of moth) with the pathogenic fungus. On the contrary, the reference teaches burying the moths' living pupae underground and waiting for the soil-inhabiting entomopathogenic fungi to infect the pupae. Kamata et al. do not teach the use of conidia or ascospores. Kamata et al. also do not teach the use of hyphal bodies, as claimed by Applicants.

Furthermore, Applicants have amended claim 4 to require a spawned insect being inoculated by injection with hyphal bodies. However, Kamata et al. do not teach or suggest insects directly inoculated by injection with hyphal bodies.

Therefore, the invention of claim 4 is clearly patentable over Kamata et al.

The rejection of claim 4 under 35 U.S.C. §102(b) as being anticipated by Harada et al. is respectfully traversed.

The Examiner takes the position that Harada et al. teach spawn insects (*Mamestra brassicae*) which are inoculated with hyphal bodies and used for the production of fruit bodies.

As discussed earlier, the term "hyphal body" does not refer to a part of hypha, but rather to a special type of cell that an entomopathogenic fungus forms within insect bodies as it grows. (See page 8, lines 7-11 of Applicants' specification.) On the contrary, the terms "conodium", "conidia" and "ascospore(s)" dispersion cells formed on the outer surface of insect bodies killed by fungi.

Harada et al. do not teach the use of hyphal bodies. Harada et al. prepared a suspension of ascospores and attempted to inoculate insects with the fungus either by immersing healthy insects in the suspension to sprinkle the insects with the ascospores, by injecting the suspension into pupae of insects, or by bringing the cultured hyphae into contact with the surface of pupae. Harada et al. teach that the inoculation by injecting the suspension of ascospores failed, resulting in decomposition

of all of the pupae used. Harada et al. not teach or suggest a spawned insect being directly inoculated by injection with hyphal bodies.

For these reasons, the invention of claim 4 is clearly patentable over Harada et al.

The rejection of claim 4 under 35 U.S.C. §102(b) as being anticipated by Fukatsu et al. is respectfully traversed.

The Examiner takes the position that Fukatsu et al. teach spawn insects (e.g. *Paecilmyces tenuipes*) which are inoculated and cultured to be used for the production of fruit bodies.

As discussed above, Applicants' hyphal bodies are a special type of cell that an entomopathogenic fungus forms within insect bodies as it grows, while conidia are dispersion cells formed on the outer surface of insect bodies killed by fungi. Fukatsu et al. use conidia as an inoculum. The reference teaches placing healthy insects on a filter paper impregnated with a suspension of conidia to infect the insects. Therefore, Fukatsu et al. do not teach or suggest a spawned insect being directly inoculated by injection with hyphal bodies.

For these reasons, the invention of claim 4 is clearly patentable over Fukatsu et al.

Therefore, in view of the foregoing amendment and remarks, it is submitted that each of the grounds of rejection set forth by the Examiner has been overcome, and that the application is in condition for allowance. Such allowance is solicited.

Respectfully submitted,

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